

Fabrication of 12 m Long $\text{Sm}_1\text{Ba}_2\text{Cu}_3\text{O}_{7-\delta}$ Coated Conductor by Thermal Co-evaporation

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We fabricated 12m long $\text{Sm}_1\text{Ba}_2\text{Cu}_3\text{O}_7$ coated conductors using bi-axially textured Ni tapes. The buffer layers were $\text{CeO}_2/\text{YSZ}/\text{CeO}_2$. The CeO_2 films were deposited using thermal evaporation with water vapor. The YSZ films were deposited using dc-sputtering with metallic targets and water vapor. Their in-plane textures were as good as $\sim 9^\circ$. The SBCO films were deposited using co-evaporation method. The thickness of the SBCO film was about 500nm. We cut few cm long pieces from several places of the tape and measured the critical current density (J_c). J_c of each piece was larger than $0.4\text{MA}/\text{cm}^2$. The best J_c of short tapes was $1.3\text{MA}/\text{cm}^2$.

keywords : SBCO, thermal co-evaporation